

### ABSTRACT OF THE DISCLOSURE

A diagnostic system and method for a compressor assembly including a compressor and a motor protector includes logic circuitry associated with the motor protector and operable to analyze a status of the motor protector as a function of time and identify a specific fault cause. The diagnostic system also includes a demand signal sensor and a current sensor, wherein the logic circuitry is associated with the sensors to further enable the diagnostic system to determine a specific fault cause.